

## **MA-412: THEORY OF MANIFOLDS**

Manifolds and smooth maps; Derivatives and Tangents; The inverse function theorem and Immersions; Submersions; Transversality, homotopy and stability; Embedding manifolds in Euclidean space; Manifolds with boundary; One manifolds and some consequences; Exterior algebra; Differential forms; Partition of unity; Integration on manifolds; Exterior derivative; Cohomology with forms; Stoke's theorem; Integration and mappings; The Gauss-Bonnet theorem; Lie groups as examples of manifolds; Their Lie algebras; Examples of matrix Lie groups and their Lie algebras.

### **RECOMMENDED BOOKS:**

1. Guillemin, V. and Pollock, A., Differential Topology, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1974.
2. Boecker, T. and Dieck, T., Representations of Compact Lie groups, Springer Verlag, 1985.
3. Bredon, G.E., Introduction to Compact Transformation Groups, Academic Press, 1972.